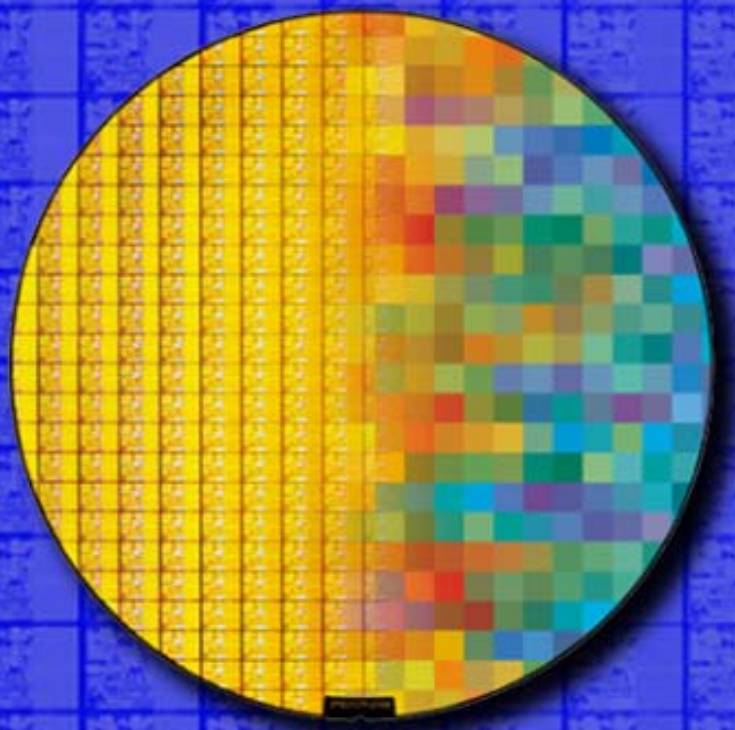

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VIDEO

Platform Innovations for the Digital Enterprise

DEBORAH CONRAD
Vice President and General Manager
Solutions Market Development Group

PRASAD RAMPALLI
Vice President, Finance and Enterprise Services
Director and Chief Architect, Architecture and Integration Platforms

ABHI TALWALKAR
Vice President and General Manager
Enterprise Products Group

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"...Big changes follow from small events..."

Malcolm Gladwell, The Tipping Point

Today's Business Transformation Requires a Service Oriented Enterprise

SERVICE ORIENTED ENTERPRISE

1960 1970 1980 1990 2000 2010

MAINFRAMES — Company level Information & Automation

MINI-COMPUTERS — Departmental Empowerment

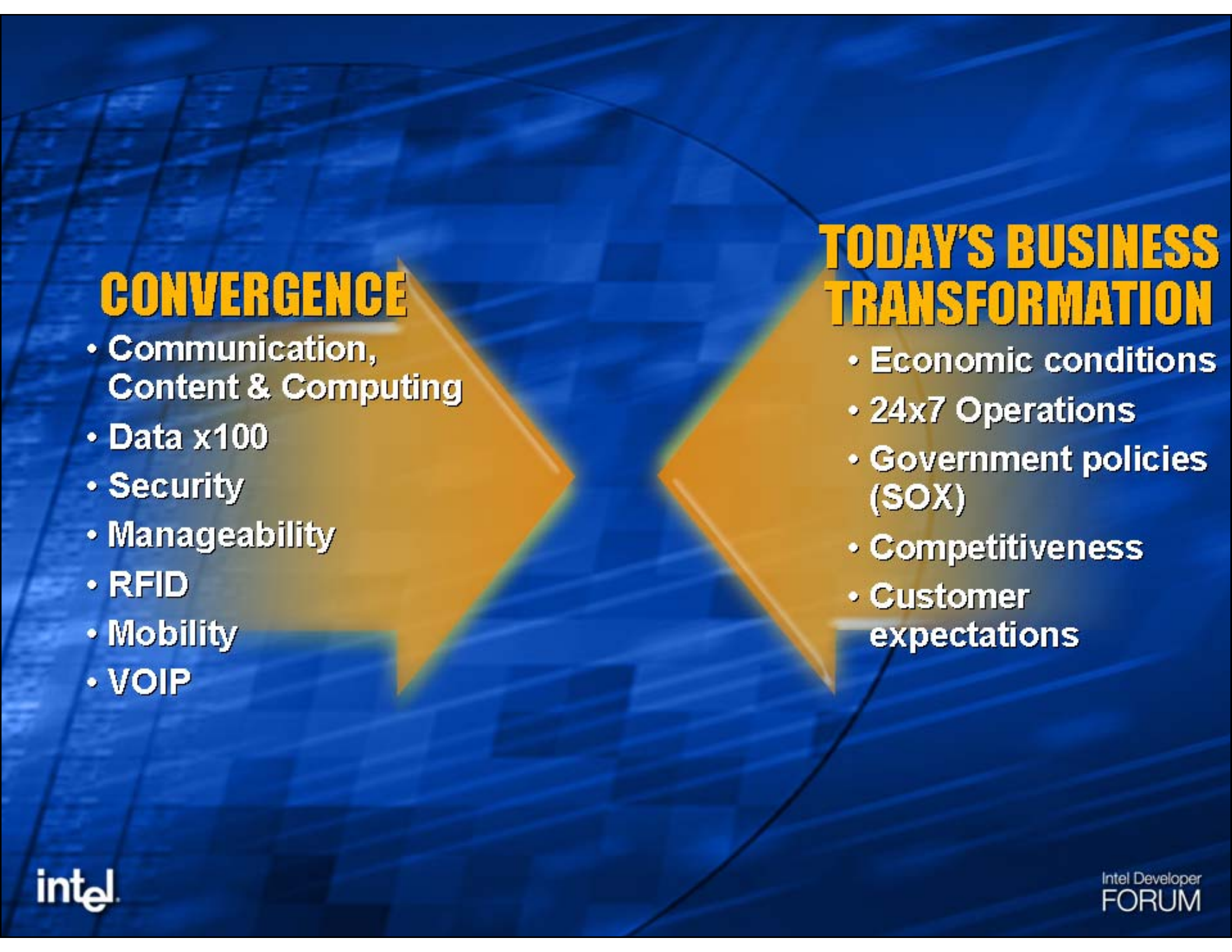
PC — Personal Freedom

CLIENT-SERVER — Pervasive, global and integrated groups

INTERNET

CONVERGENCE — Anytime, anywhere

BUSINESS TRANSFORMATIONS


CONVERGENCE
• Communication, Content & Computing
• Data x100
• Security
• Manageability
• RFID
• Mobility
• VOIP
TODAY'S BUSINESS TRANSFORMATION
• Economic conditions
• 24x7 Operations
• Government policies (SOX)
• Competitiveness
• Customer expectations
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SERVICE
ORIENTED
ENTERPRISE
ANIM
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British Gas

Business challenge?

- Profitability
- Enhance productivity
- Improve customer service
- Reduce infrastructure costs

What changed?

- Replace paper and clipboards
- Access and shared critical data
- Service visits up 250%, 6.5m per year
- Using public Wi-Fi hotspots

IT strategy?

- WLAN enabled "hot desks"
- Panasonic Intel® Centrino™ Mobile Technology ToughBooks
- HP ProLiant Intel® Xeon™ processor MP servers
- Microsoft Windows XP Tablet edition

Next challenge?

- Wireless computing to office workers
- GSM/GPRS equipped notebooks
- WWAN for mobile workers

Procter & Gamble

P&G

Business challenge?

- Improve competitiveness
- More innovations, products, brands
- Time to market
- Reduce out of stocks

What changed?

- Collaborative supply chain
- Product packaging and design
- 3-4x more simulations

IT strategy?

- IT improves revenue at P&G
- 2-3x performance of P&G fastest systems
- Grid of SGI Altix 3700 Intel® Itanium® processor superclusters and Intel® Xeon™ workstations
- SGI Linux and 96GB shared memory

Next challenge?

Procter & Gamble

P&G

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Next challenge?

- Massive retooling for RFID and EPC
- Data management and usability

SOE Requires Ecosystem Leadership


SOE Requires Ecosystem Leadership
Hardware & Network
Carriers
ISVs
Software
Network Infrastructure
Content Providers
SERVICE ORIENTED ENTERPRISE
Computer OEMs
Corporate Developers
Solution Providers
VARs
Systems Integration
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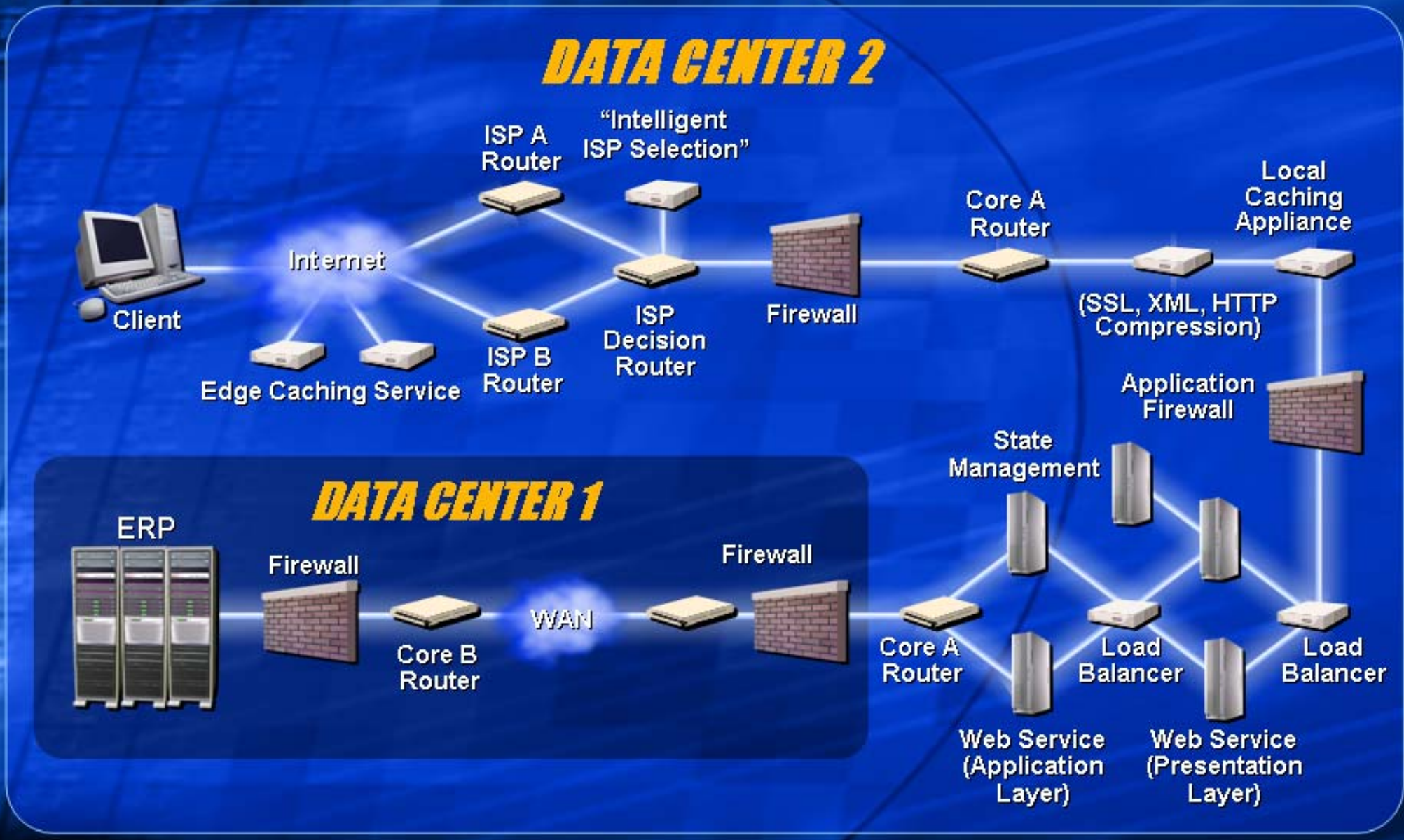
CIO Challenges

Key CIO Challenges

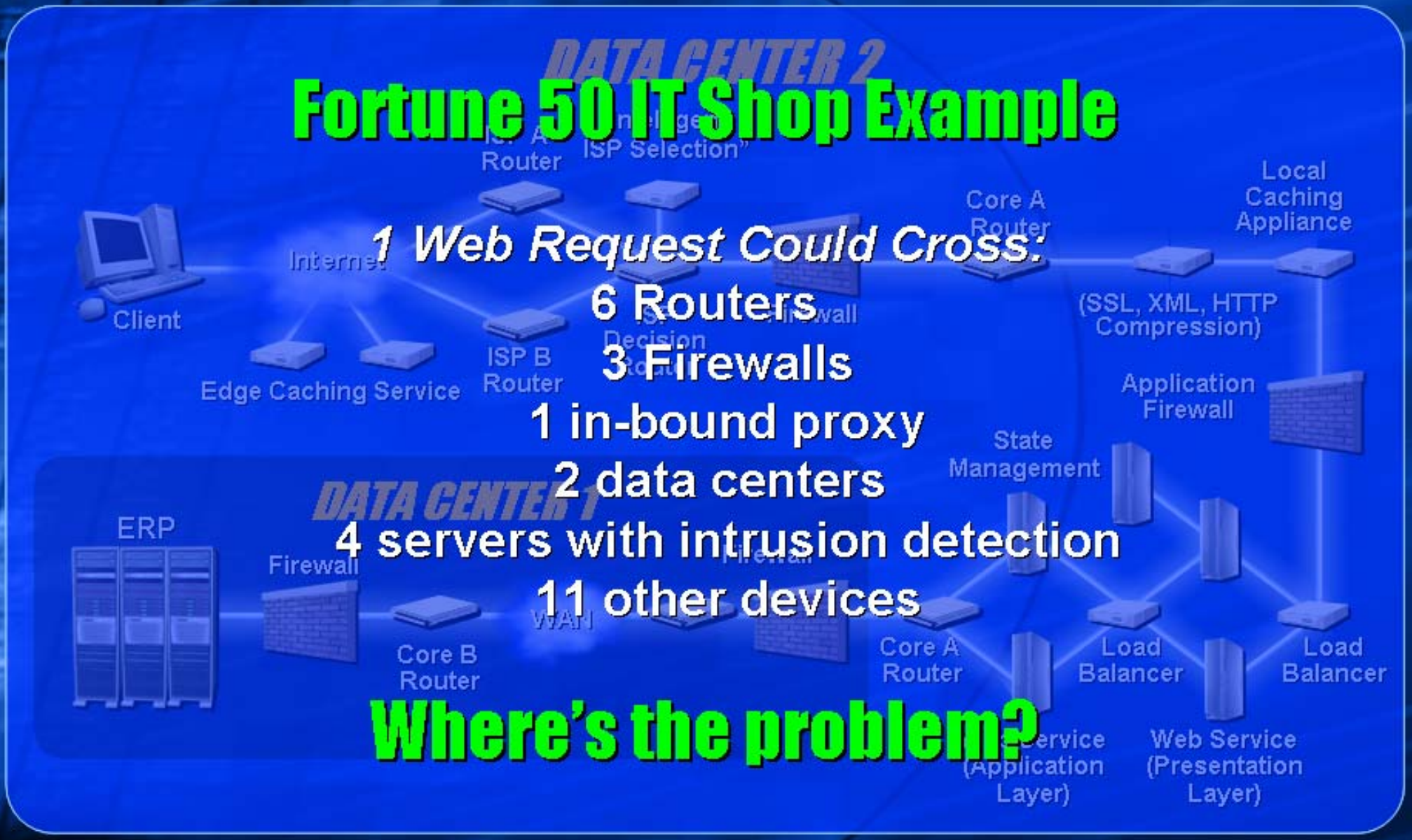
1. Re-architecture & Operations Automation a key theme in IT shops for TCO/Agility breakthrough
2. Security and controls spending growing by ~ 15 % YOY in CIOs budget
3. Data Volume continues to grow 2X every 12-18 months – must harness as a corporate asset
4. Biz Solution Integration must migrate to a "plug and play" based platform

The IT Mandate :
Aggressively move to SOE to address above challenges

TCO/Agility Challenge: Complexity



TCO/Agility Challenge: Complexity



1 Web Request Could Cross:

6 Routers

3 Firewalls

1 in-bound proxy

2 data centers

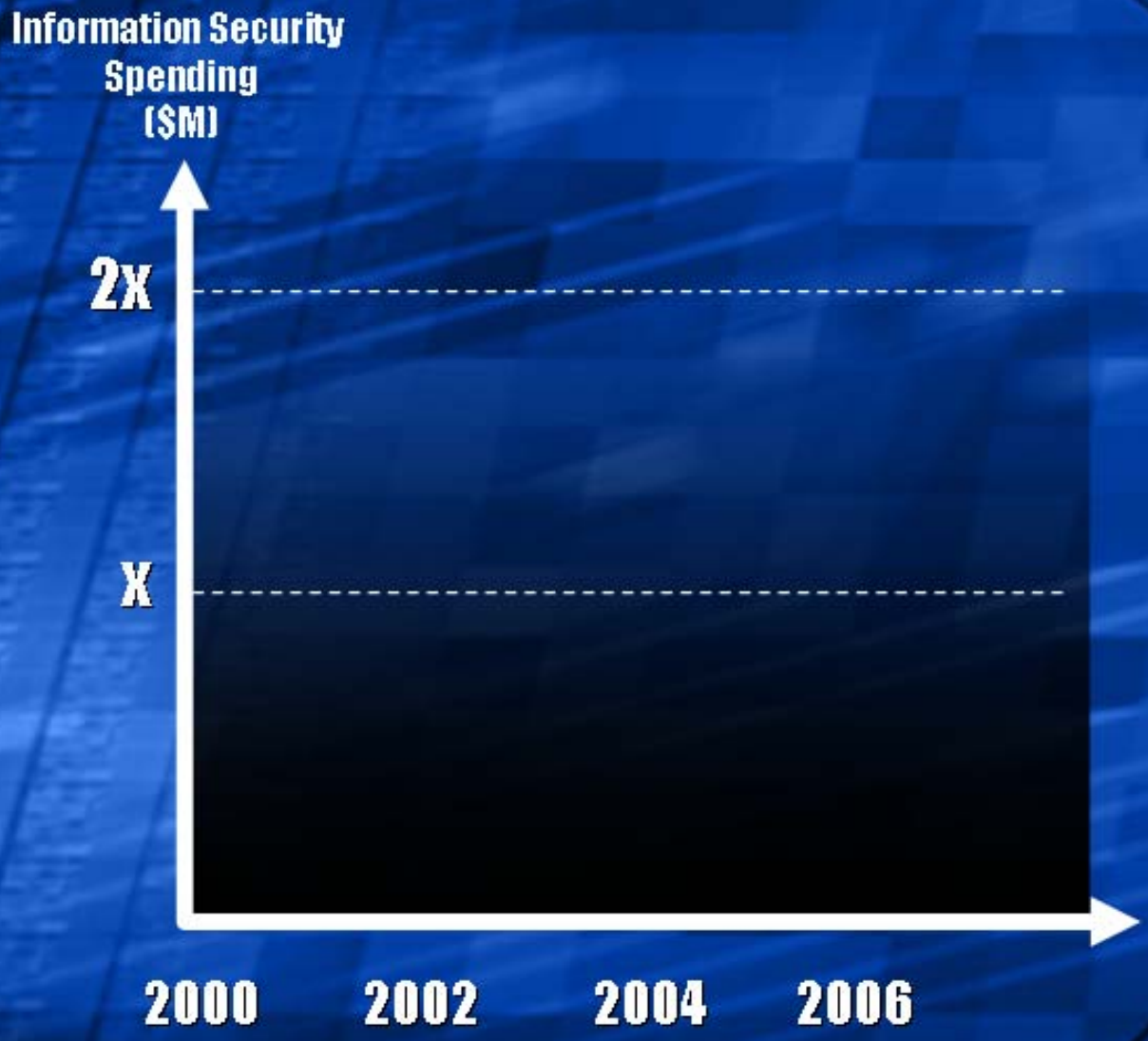
4 servers with intrusion detection

11 other devices

Where's the problem?

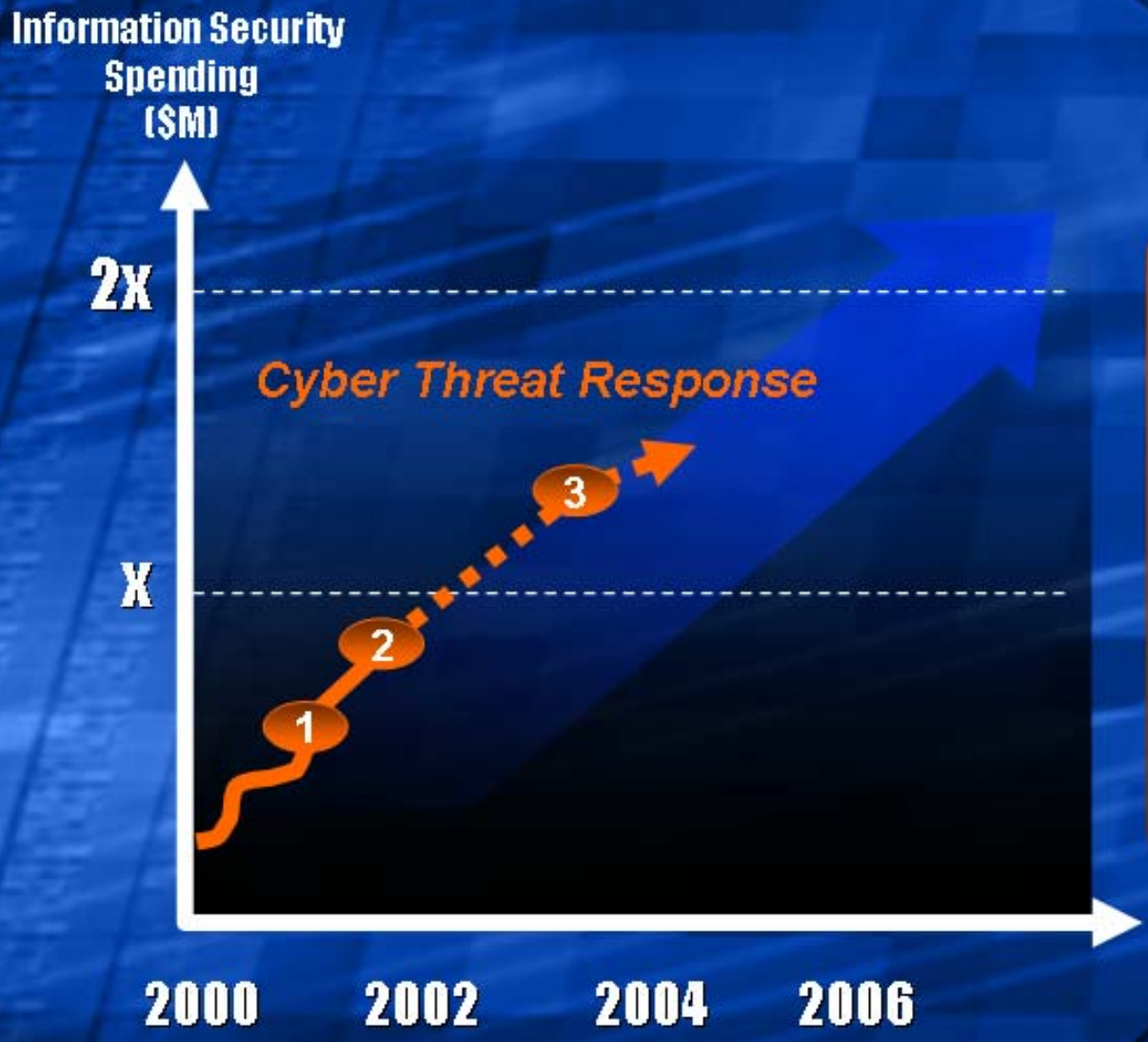
Security and Controls Investments

~ 15% YOY Growth ~



Security and Controls Investments

~ 15% YOY Growth ~



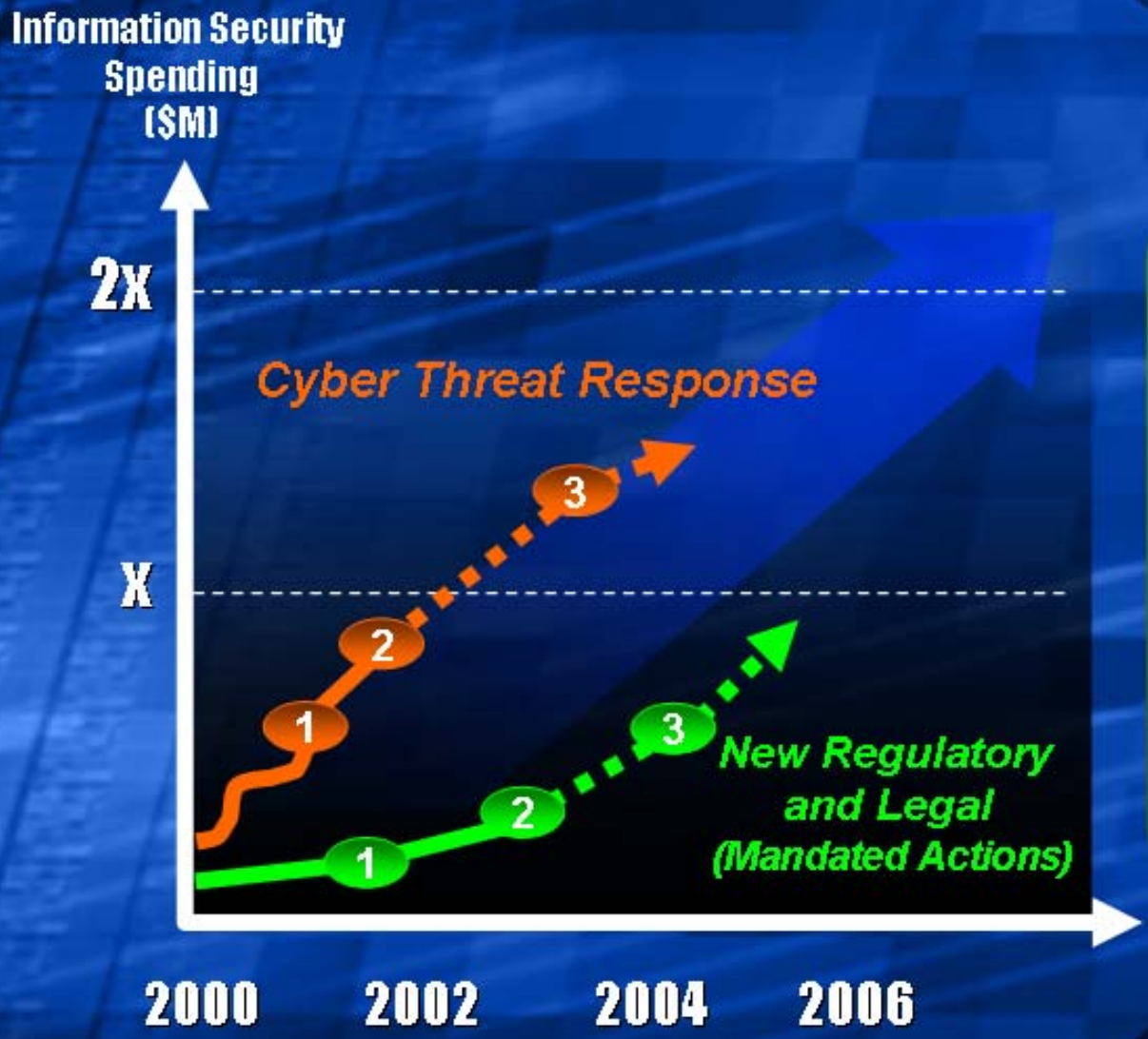
1: Code Red, 9-11 & Nimda occur in rapid succession

2: Slammer challenges IT's ability to prevent and respond

3: Blaster SQL Worm, RPC Vulnerability attacks create penetration in multiple layers of solution stacks

Security and Controls Investments

~ 15% YOY Growth ~



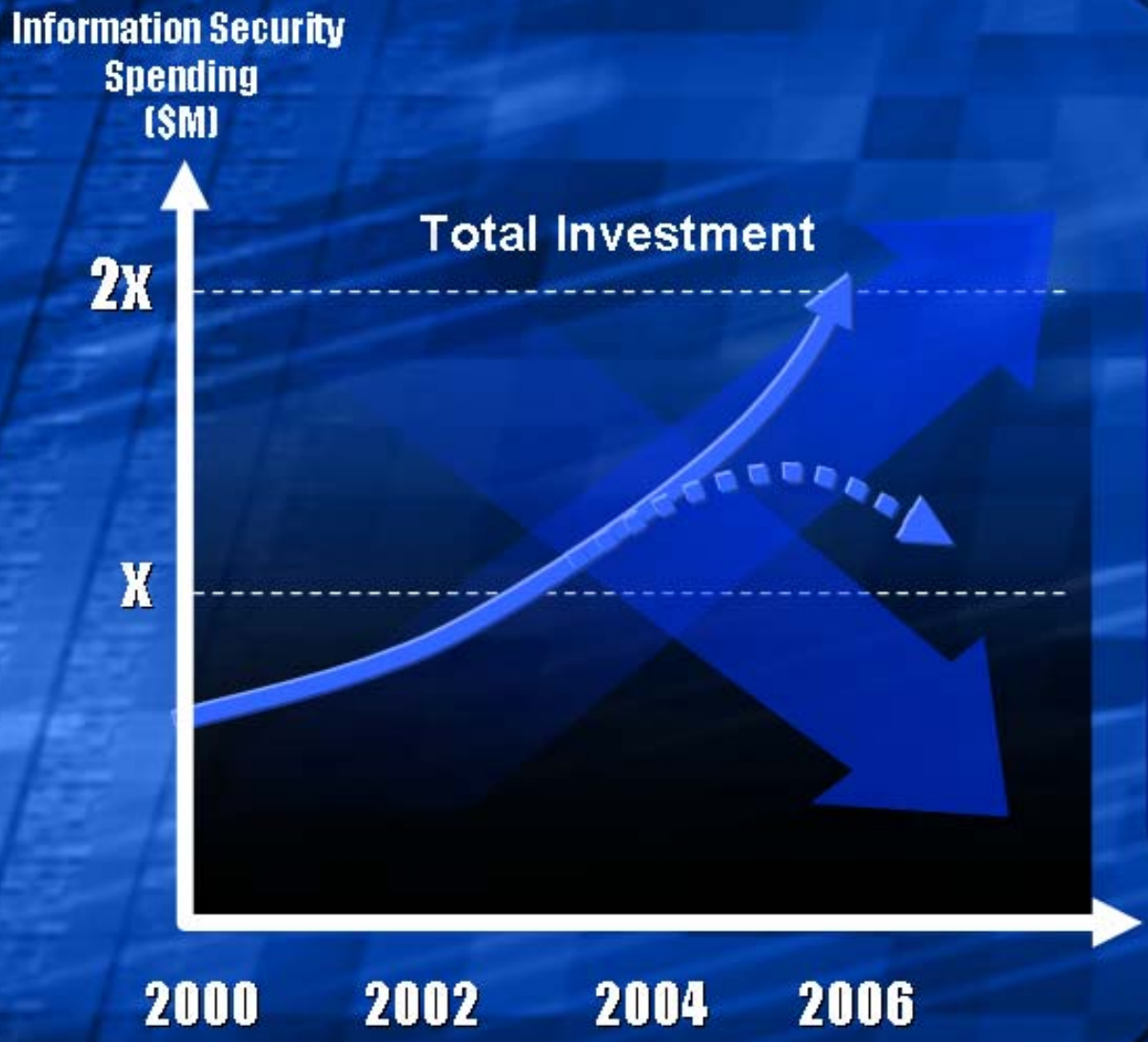
1: Sarbanes-Oxley (with emphasis on financial reporting)

2: European privacy and California privacy laws

3: Assured Biz Continuity/Disaster Recovery due to regulatory requirements

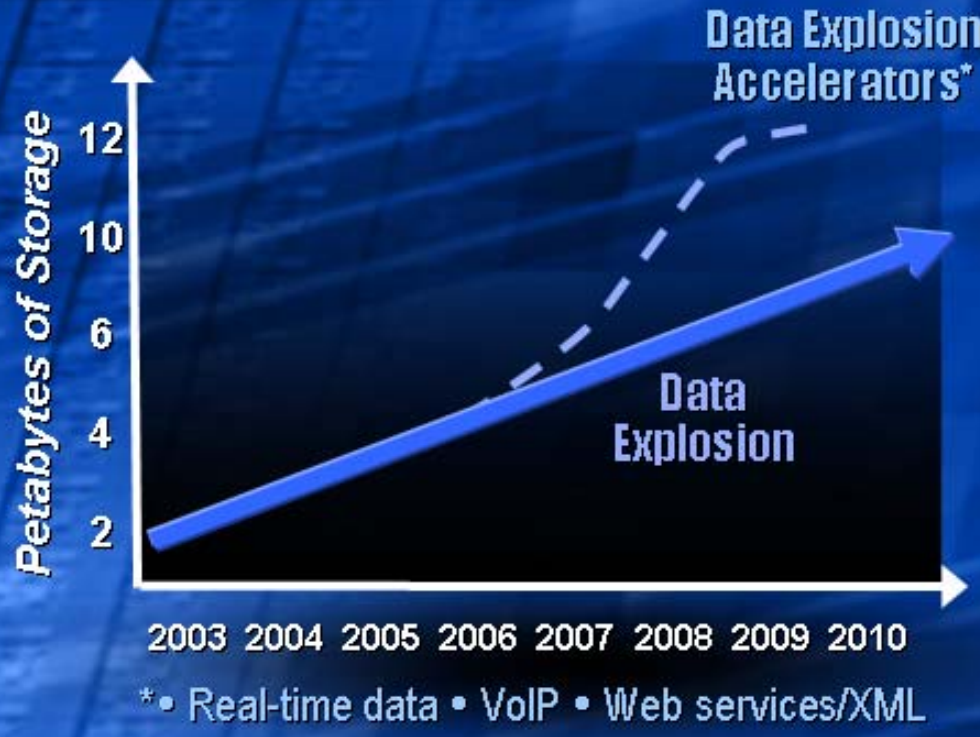
Security and Controls Investments

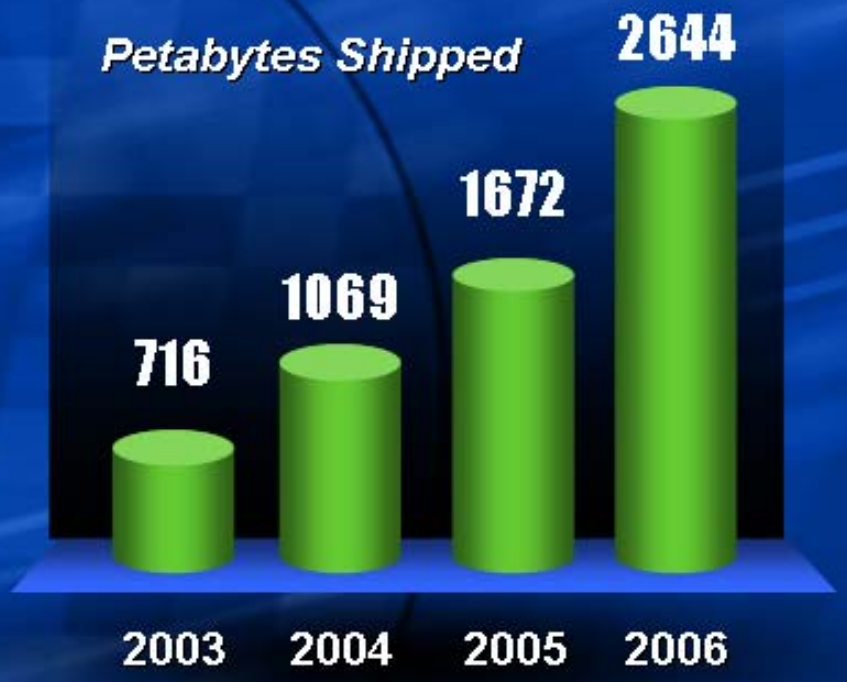
~ 15% YOY Growth ~



How do we manage the escalating cost of security within the CIO Budget ?

Data Explosion - Harnessing as Competitive Advantage





Manage Your Data Before It Manages You

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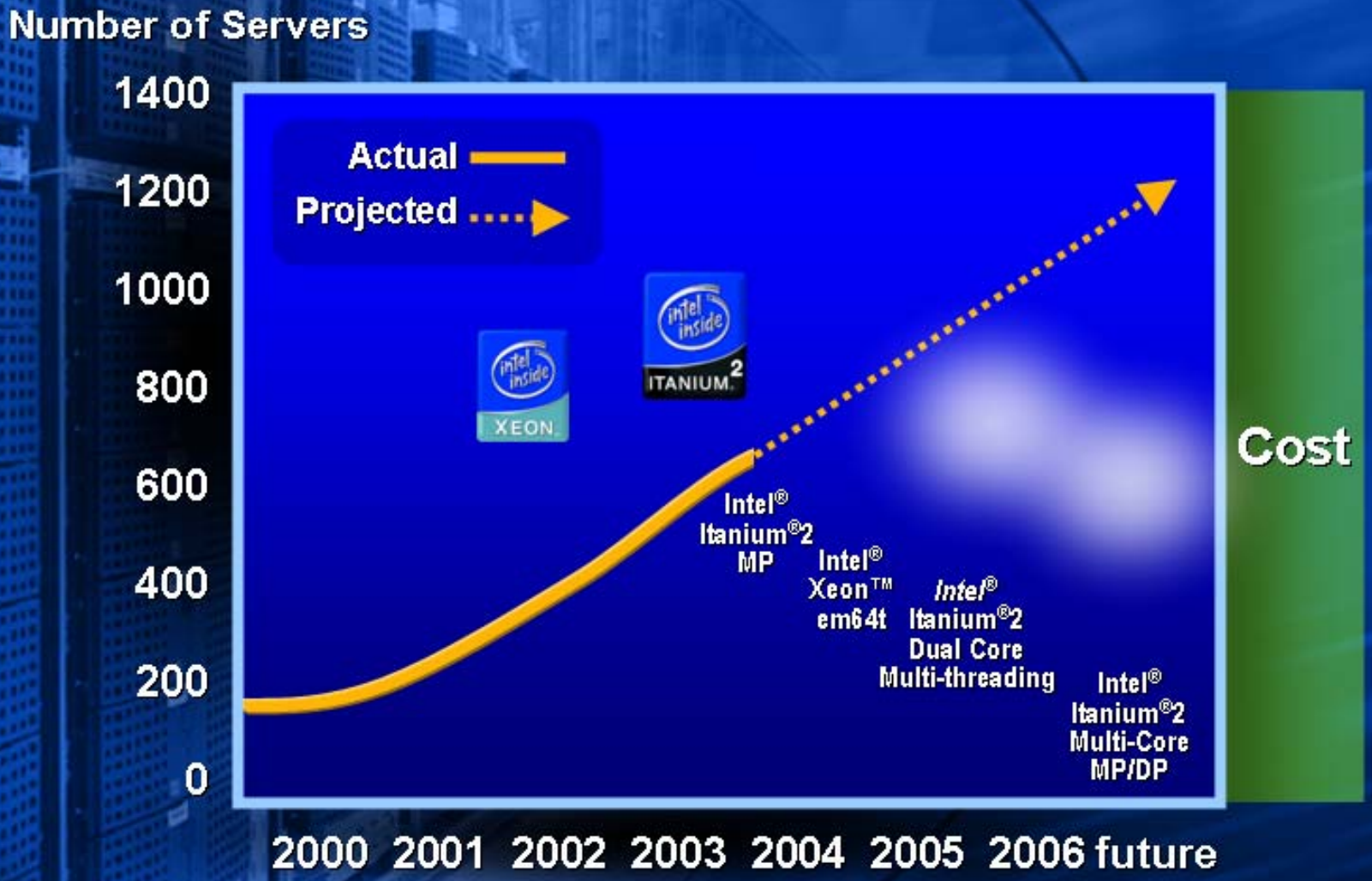
Call to Action

TCO Breakthrough Strategy

ERP / Middleware Case Study



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TCO/Agility Breakthrough – Evolution

2003 - 2004

Server Consolidation
Pentium® processor-based systems

Shared Landing

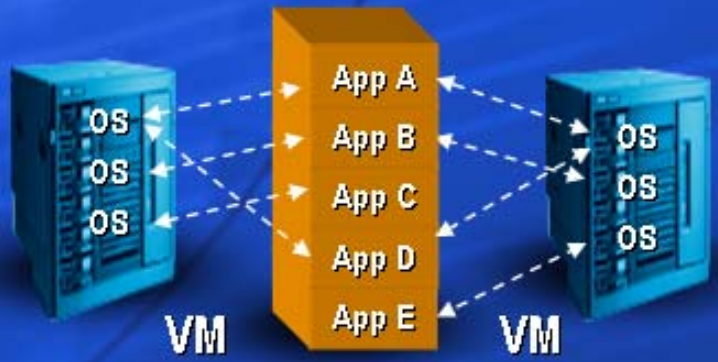
Intel Host Platform

2004 - 2007

Modularization
On-Demand Servers

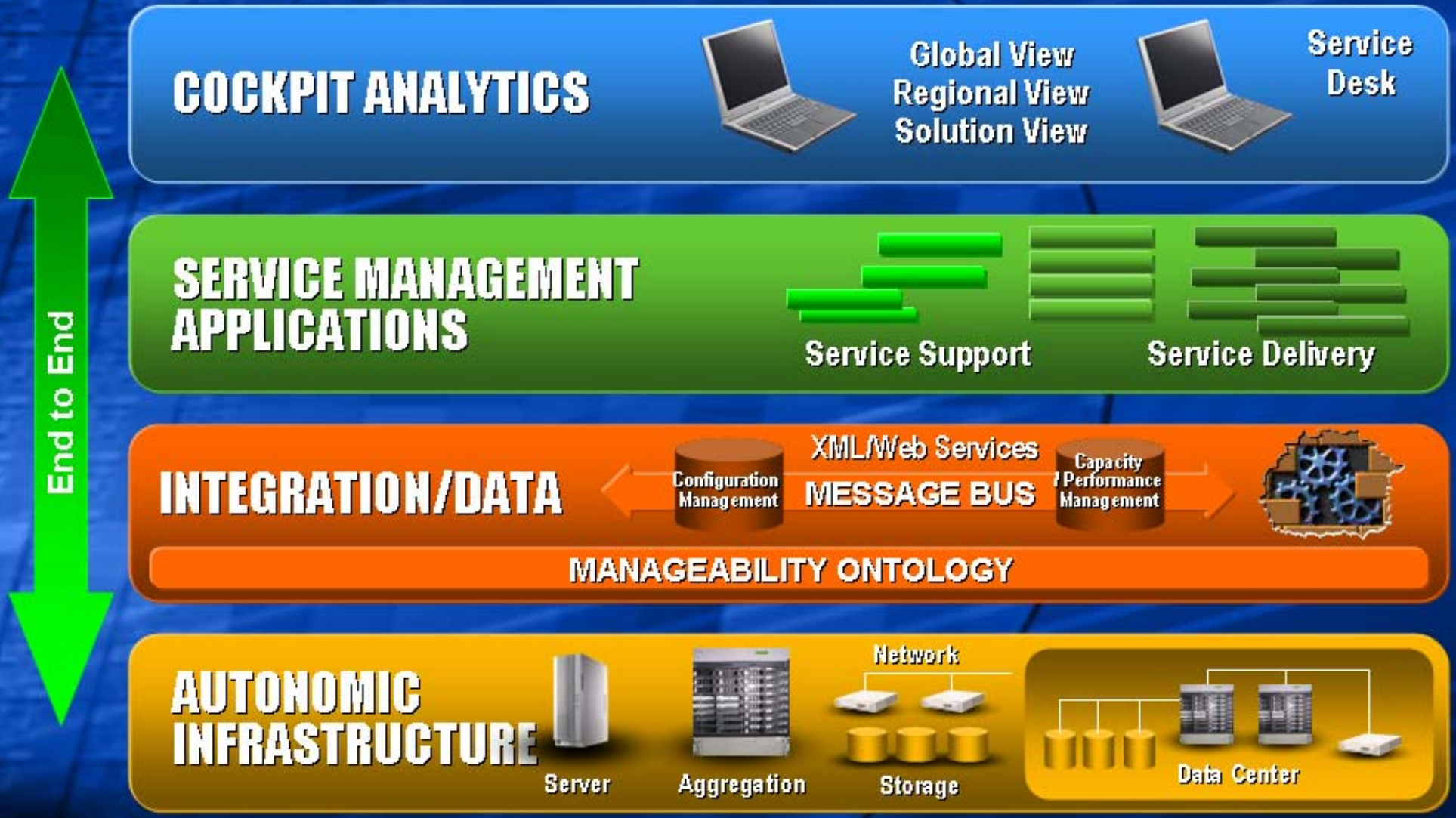
Bladed Architecture

Virtualization
On-Demand Virtual Servers



DEMO

Automation Framework – 3 Year Journey



Call to Action

Re-architect computing environment for migration to a SOE

– Move to a model driven architecture

- Modularity, Automation and Virtualization for TCO/Agility breakthrough
- Scale “right” architecture for harnessing data explosion into analytics as a competitive advantage
- Turn the Cost curve on Security while enabling a “defense in depth” architecture

Platform Technology Innovations to Address CIO Challenges

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More Platform Value through Technology Innovation

Cores and Threads

Virtualization

Power Management

Modularity

I/O and Memory

System Management

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Comparisons referenced are in relation to Intel product offerings today (as of May 2004)

DEMO

Power Management Innovation

Growing Capabilities over TIME

Reduced Power via Management
- Demand Based Switching (**DBS**)
- Aggressive use of **C1E** state

Power Prediction/Monitoring
- Report Configuration Power (**PConfig**)
- Monitor Power (**PSMI**)

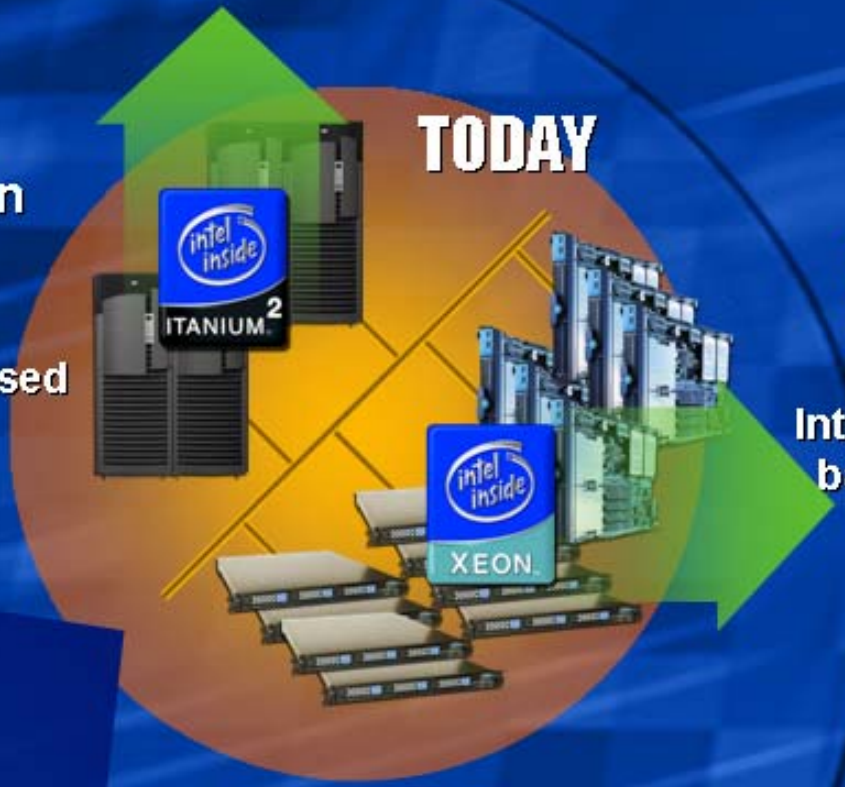
Lower power cores
- Process (**65nm**)

Proliferate Benefits

Server Consolidation

SCALE UP

Physical consolidation
Application
& Data Integration
Intel® Itanium® 2 processor based
large SMP systems
Up to 128 CPUs



SCALE OUT

Centralization
Intel® Xeon™ processor
based 2-way & 4-way

YESTERDAY

Enterprise Production Environment
Large Number of Servers

TOP 5 REASONS

1. Improve system availability
2. Ease of management
3. Improved disaster recovery
4. Optimize system performance
5. Improved security

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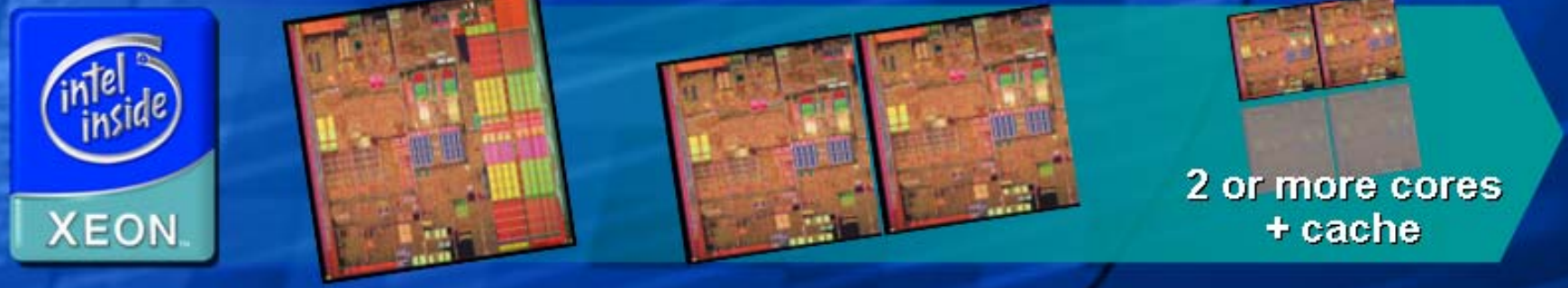
Enterprise Multi-Core Transition
...dual core a natural evolution

TODAY
Single Core

2005-2006
Dual Core

Future
Multi-Core



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SILVERVALE TECHNOLOGY

Better Virtualization through OSVs and ISVs

Virtualization End User Benefits

- Reliability
- Efficiency & flexibility
- Security

Silvervale Technology Benefits

- Choice
- Robustness
- Performance

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Intel based Modular Servers

2002

- Ultra dense form factor, low-power

2003-2004

- Intel® Xeon™ processor based, multiple fabrics, DBS, Intel® Itanium® 2 processor based

2005-2006

- Standards-based manageability, virtualization, dual core

Future

- Multi-core, storage & I/O virtualization, converged fabrics

Source: IDC World Wide Quarterly Server Forecast: Q1 2004 Release 6/10/04

DELL, HP, IBM & INTEL LEAD FORMATION OF DMTF SERVER MANAGEMENT WORKING GROUP TO SATISFY CUSTOMER SERVER HARDWARE MANAGEMENT REQUIREMENTS

BUSINESS WIRE – December 15, 2003

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Intel Cross-Platform Manageability

- Consistent architecture for infrastructure management across Intel-based platforms
  - Interfaces
  - Features & capabilities
  - Protocols
- Extensible platform for OEMs and ISVs to build self-management capabilities
  - Providing system state / OS independence
  - Secure, OOB accessibility

Intel® Itanium® Architecture Growth

MARKET

- Over 3x revenue growth Y/Y*
- More than 10x growth* in shipments of large SMP systems (64+)

IDC Worldwide Quarterly Server Tracker, August 2004

HARDWARE

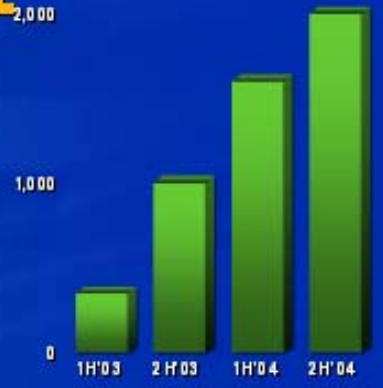
- Number of server SKUs keep growing

	2002	2003	2004
2P, 4P	20	50	70
8P - 128P	5	15	20

- 8 of 9 RISC vendors selling Intel Itanium-based servers

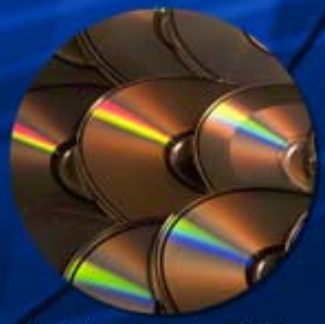
SOFTWARE

- Over 100% Y/Y growth
- 2004 forecast of 2000 applications reached TODAY!



END-CUSTOMERS

- 38 of Global 100 companies using Intel Itanium-based servers today
- High profile wins: General Mills, Pfizer, Thomson Financial, Procter and Gamble, The Weather Channel, First American Title, Motorola



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Intel Powers High Performance Computing

Leading the COTS Revolution

Intel Architecture most prominent in Top 500.....

300

150

- Intel® Itanium®
- Intel® Xeon™

Braving new fronts...

PROJECT COLUMBIA

" This high-profile installation is a vote of confidence in the native 64-bit capabilities and performance of Itanium"

'01 Nov '01 Jun '02 Nov '02 Jun '03 Nov '03 Jun '04 IDC

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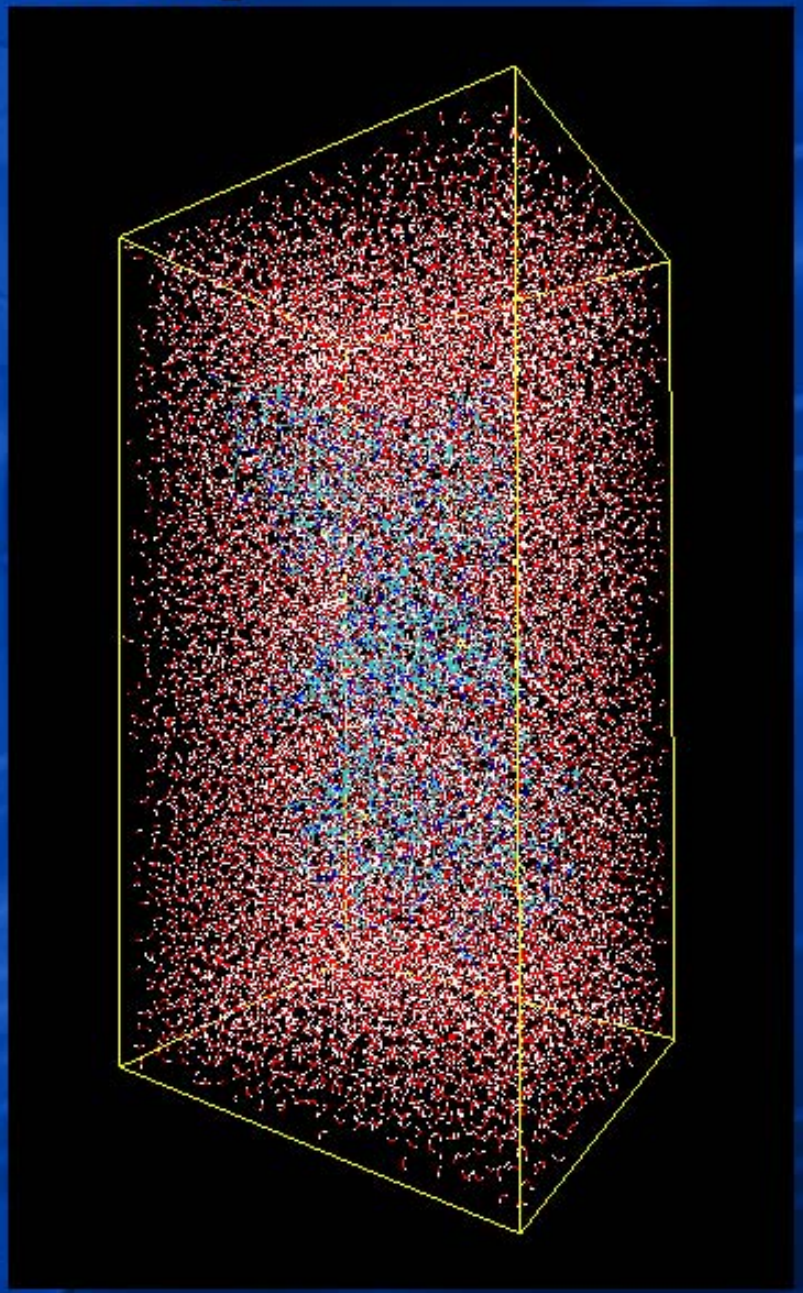
Simulation Setup

- Box: 76 x 81 x 145 Angström
- 605 amino acids
- 25,981 water atoms
- 84,238 atoms
- 3 ns simulations



Choice and Flexibility for Evolving 64-bit Servers

Current Architecture or Solutions	Transition Benefits	Architecture of Choice
RISC Architecture	Exceptional performance – choice of operating systems, software and hardware vendors TODAY	Mission critical 64-bit architecture – Premier performance, reliability, scalability; cost effective vs. RISC
Target Applications Database, ERP, BI, HPC		
IA-32 Architecture	64-bit support via Intel® EM64T, great performance for 32-bit applications	Mainstream 64-bit architecture; price – performance – reliability
Target Applications MP: SCM, CRM, BI, ERP DP: HPC, Application Server, Workgroup E-Commerce, Portals, Firewall/Security, Workstation apps		

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* Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance.

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Intel Enterprise Server Platform Roadmap

Major advancements in features, technologies and performance

Current Platforms	2005-2006+	FUTURE
Multi-processor (MP) Platforms		
Intel® Itanium® 2-based MP Platforms Itanium 2-6M/Itanium 2-9M Intel® E8870/OEM	**Next generation MP** Montecito/ **MONTVALE** Intel E8870/OEM	**Common Platform Arch.** Tukwila Future chip set
Intel® Xeon™ Processor MP-based Platforms Xeon Processor MP OEM chip sets	**Next generation MP** **CRANFORD**/Potomac/Tulsa Intel® Twin Castle/OEM	**Common Platform Arch.** **WHITEFIELD** Future chipset
Dual-processor (DP) Platforms		
Intel Itanium 2-based DP + LV Platforms Itanium 2 (+ LV)/Fanwood (+LV) Intel E8870/OEM	**Next generation DP/LV** Millington (+ LV) **DP MONTVALE (+ LV)** Intel E8870/OEM	Future Platform Dimona (+ LV) Future chipset
Intel Xeon Processor-based Platforms Xeon Processor/ **IRWINDALE (2005)** Intel® E7520 and Intel E7320	Next Generation DP Next generation chip set	Future DP Future chip set
PCI Express DDR-2 Intel® EM64T Power Management (DBS) Hyper-Threading Technology IPMI 2.0	plus Dual-core Multi-threading Silvervale Technology Power Management (Pconfig/PSMI) Foxton, Pellston Technology Fully Buffered DIMMs CPMP Manageability	plus Multi-core Enhanced Virtualization Enhanced I/O & Memory Enhanced RAS Common platform Manageability: Self Provision, Self Protect, Self Heal

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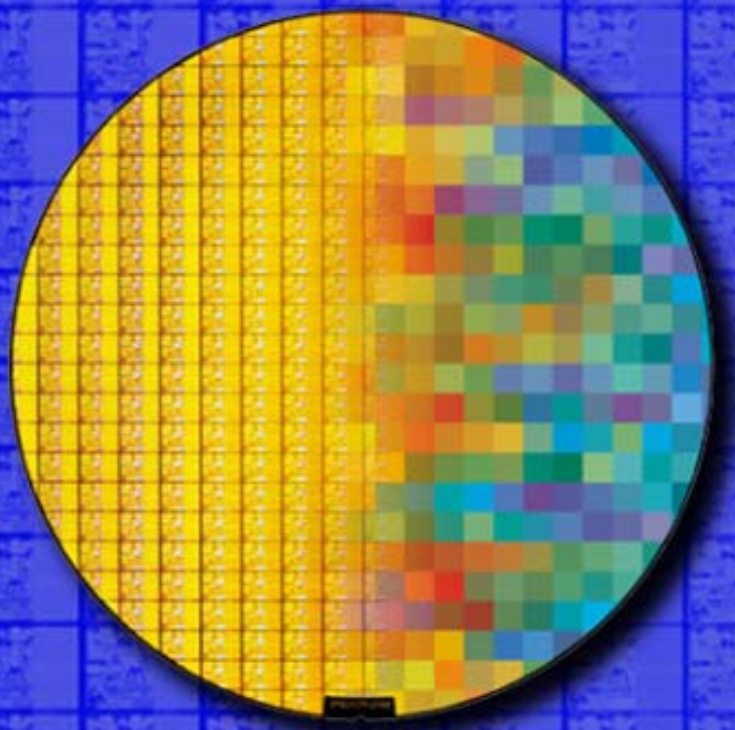
Summary

- Convergence is driving today's business transformation – SOE required to enable it
- SOE will drive the re-architecture of today's IT infrastructure for TCO, agility and security
- Intel is intercepting these emerging IT challenges with technologies and products

However, to deliver these capabilities we need great industry collaboration



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